

Attention Bias in Social Anxiety. Are there Mitigating Effects of Self-Affirmation?

Samantha McCarthy
BA (Hons)

*A report submitted in partial requirement for the degree of Master of Psychology
(Clinical) at the University of Tasmania*

Statement

I declare that this thesis is my own work and that, to the best of my knowledge and belief, it does not contain material from published sources without proper acknowledgement, nor does it contain material which has been accepted for the award of any other higher degree or graduate diploma in any university.

.....

Samantha McCarthy

Acknowledgements

This thesis would not have been possible without the support of many people. Many thanks to my supervisors, Dr. Jenn Scott who made this study possible and Dr. Benjamin Schüz, who read my numerous revisions and helped make some sense of it all. Another big thank you to all my friends, family and psych buddies who endured this process with me, despite the constant tiredness and whinging. Most importantly, thank you to the 150 people who took the time to participate in this study. And finally, thank you to my cat, Bella who impatiently sat through yet another thesis journey and Cocky the Cockatoo for removing all the keys off my laptop, just to add some entertainment to this writing process.

Table of Contents

Abstract.....	1
Introduction.....	3
Attention Bias in Anxiety.....	3
Social Anxiety and Attention Bias	4
Self-Affirmation and Defensive Bias	7
Self-Affirmation and Attention Bias.....	12
The Current Study.....	13
Summary and Aim of the Current Study.....	14
Method.....	15
Participants.....	15
Materials and Procedure.....	16
Design and Data Analysis.....	22
Results.....	23
Demographics.....	23
Descriptive Statistics.....	24
Randomisation and Confounding Variables Checks.....	25
Testing ANCOVA assumptions.....	26
Between Subjects ANCOVA.....	27
Discussion.....	28
Main Effect of High versus Low social anxiety group.....	29
Main effect of Self-Affirmation.....	33
Social anxiety x Self-Affirmation Interaction.....	33

Limitations.....	34
Strengths and Implication for Future Directions.....	36
Summary and Conclusion.....	37
References.....	39
Table of Appendices.....	46

Tables and Figures

Figure 1	Participant flow throughout study.....	17
Figure 2	Mean Interference scores of high and low social anxiety groups after SA manipulation or control conditions.....	25
Table 1	Estimated Marginal Means for Social Anxiety Group, Experimental Group and Social Anxiety * Experimental Group Interaction.....	28

Abstract

A number of studies have indicated that Self-Affirmation (SA) manipulation plays a role in decreasing an attention bias toward threatening information, especially when there is a threat to the self. Despite this, to date no studies have investigated if SA can mitigate the attention bias toward socially threatening stimuli that is exhibited in individuals high in social anxiety. The aim of the current study is to explore the possible moderating effects of SA manipulation on the attention bias in individuals with high social anxiety. 150 participants completed the study, 8 of which were excluded based upon poor accuracy on the emotional Stroop task. This left a sample of data from 142 participants (aged 18-71 years, $M=26.66$, $SD=10.94$). Participants were required to complete a number of measures online, including the Brief Fear of Negative Evaluation Scale (Leary, 1983) and the Beck Depression Inventory- 2nd edition (Beck, Steer & Brown, 1996) as well as undergo a SA manipulation or control condition similar to that used in previous SA studies (Armitage, Harris and Arden, 2011). The independent variables were social anxiety group (high, low) and experimental condition (SA manipulation, control). The dependent variable was emotional interference score as identified by latency times to identify print colour for social threat and control words presented in an emotional Stroop task. A 2 by 2 (Social anxiety: high, low; experimental condition: SA, control; covariate: depression score) ANCOVA was run on the data and revealed no significant main effects for social anxiety group or experimental condition ($p>.05$). The social anxiety group x experimental condition interaction was also not significant ($p>.05$). Unfortunately, the aim of the study could not be tested due to no significant differences in emotional interference scores between those high and low in social

anxiety. This raises questions about the presence of an attention bias toward socially threatening words by individuals high in social anxiety in an online environment.

Attentional Bias in Anxiety

Attention processes are believed to be an important causal and maintaining factor in anxiety (Bögels & Mansell, 2004). Evidence suggests that people with high levels of anxiety exhibit an attentional bias toward threatening information consistent with their concerns; an effect that is not evident in individuals low in anxiety. The attention bias in anxiety has been studied widely using a number of different paradigms and has been exhibited for individuals high in both state and trait anxiety (Mogg, Bradley, De Bono and Painter, 1997).

It is proposed that this bias plays a pivotal role in the maintenance of the individual's anxiety, by making the likelihood of detecting threats more probable which in turn leads to a more anxious mood state (Matthews, 1990). At what stage of processing this attentional bias occurs, however is still a topic of contention. Whilst some cognitive theories such as schema theories explain this attention bias as occurring as a result of the cognitive processing of anxious individuals being guided by schemas biased toward threat which leads to threatening information being favoured at all stages of processing, more recent theories take a different view (Bögels & Mansell, 2004). One proposal is that anxious people first direct their attention toward the threat early in processing (and leading to a more anxious state) but that this is followed by a time of directing their attention away from the threat (that reduces the anxiety by avoiding the threat; Mogg, Braddely, De Bono & Painter, 1997). Others propose that the attentional bias is due to the anxious individual having difficulty disengaging from the threat, rather than increasing the likelihood of the detection of the threat (Bar-Haim, Lamy, Pergamin, Bakermans-Kranenberg & van IJsendoorn, 2007). It is likely that a number of

moderating factors play a role in the attentional bias in anxiety and it is probable that where this bias occurs and the role it plays is largely dependent on the type of anxiety being studied. However, this is outside of the scope of this study.

A meta-analysis of 172 studies (Bar-Haim et al., 2007) found that this attention bias was prevalent across a number of different groups of anxious individuals including those with Obsessive Compulsive Disorder, Generalised Anxiety Disorder, Panic Disorder, Post Traumatic Stress Disorder, Simple and Social Phobia as well as those with subclinical levels of anxiety. Furthermore, it was found that overall; this effect occurred across a number of different experimental paradigms and occurred independently of the existence of mood disorders. This attention bias was demonstrated at comparable levels across all groups tested and consistently did not occur in those low in anxiety.

Social Anxiety and Attention Bias

This attention bias toward threatening information has also been evidenced in individuals with social phobia and social anxiety. Central to both social phobia and social anxiety is a fear of negative evaluation and attentional biases are purported to occur in relation to stimuli associated with negative evaluation or when there is an expectation that one will be judged in a negative manner (Clark & Wells, 1995; Rapee & Heimberg, 1997).

Using the Stroop colour naming task, Hope, Rapee, Heimberg and Dombeck (1990), found that social phobics showed more effortful processing (as indicated by longer latency times) of words related to self-schemata and self-evaluation but not of unrelated threat words or neutral words. The finding that individuals with social phobia

show an attention bias toward fear-congruent stimuli has been replicated in a number of other studies using the emotional Stroop task (Andersson, Westoo, Johansson & Carlbring, 2006), and modified dot-probe task using words (Musa, Lepine, Clark, Mansell, and Ehlers, 2003) and faces (Mogg & Bradley, 2002).

This attention bias has also been demonstrated in individuals with subclinical levels of social anxiety both in terms of hypervigilance and avoidance of threatening stimuli. For example, Mogg & Bradley (2002) found that individuals high in social anxiety show an attention bias toward threatening stimuli in comparison to individuals with low social anxiety. However; Mansell, Clark, Ehlers and Chen (1999) found that individuals high in fear of negative evaluation showed an avoidance response to external threatening stimuli when placed under social-evaluative threat conditions on a probe detection task. The finding of either a vigilance or avoidance response to threatening stimuli has been replicated in a number of other studies using individuals with high levels of social anxiety (Vigilance : Perowne and Mansell, 2002; Ononaiye, Turpin & Reidy, 2007; Avoidance: Mansell, Clark & Ehlers, 2003).

One way of explaining the mixed findings in research on the attention bias in social anxiety is through the vigilance-avoidance hypothesis (Mogg et al., 1997). According to this hypothesis, individuals high in social anxiety exhibit enhanced processing of threatening stimuli (also known as hypervigilance) related to a social threat (such as fear of negative evaluation) followed by an avoidance response due to their inability to reappraise the stimulus as being non-threatening. That is, they display a defensive bias away from the threatening stimuli. According to cognitive models of social anxiety and social phobia, it is this response that may play a causal and

maintaining role in social anxiety and social fears. It does this by causing individuals with social anxiety to first scan the environment for threatening information (such as negative evaluation or perceived signs of it) which heightens the anxiety state (Rapee & Heimberg, 1997) and then the defensive bias or avoidance response prevents re-appraisal of the situation as non-threatening and reduces anxiety which in the long term maintains the response (Clark and Wells, 1995). Studies have indicated that stimuli linked to negative self-perception, self-critical thoughts and negative self-appraisals appear to produce this hypervigilance-avoidance response in individuals with Social Phobia (Hope et al., 1990) and high levels of social anxiety (Vassilopoulos, 2005; Ononaiye, Turpin & Reidy, 2007), thus suggesting that being socially anxious has substantial implications in terms of the individuals self schemata.

A study by Vassilopoulos (2005) also aimed to explain these mixed findings by investigating the time course of the attentional bias in individuals high in social anxiety by using a probe detection task. It was found that individuals high in social anxiety demonstrated an initial hypervigilance response toward both physical and social threat words followed by avoidance of the threatening stimuli. Those low in social anxiety did not show this effect. This effect remained after controlling for levels of general anxiety and depression. This indicates that the previous mixed findings reported here may have occurred because of the exposure time of the stimulus rather than being indicative of either a hypervigilance or avoidant response in that hypervigilance occurs at shorter durations and avoidance at longer durations. It has also been suggested that hypervigilance may occur when the individual is unsure if social threat is present and that this occurs almost immediately, and that the avoidance response occurs as a

defensive mechanism when the individual feels that they are being negatively evaluated and may take longer to develop (Bögels & Mansell, 2004).

Some further research in the area of attention bias and social anxiety has indicated that the presence of a social threat or expectation of being evaluated may moderate the attention bias in a number of ways. A study by Ononaiye, Turpin and Reidy (2007) indicated that individuals high in social anxiety showed an attention bias toward social threat words when no social threat was present but exhibited an attention bias toward physical threat words related to the physiological anxiety response when a social threat was present (the expectation of giving a speech). Furthermore, there is some research that suggests that when the threat of social evaluation is absent, no attention bias toward threatening information is evident (Mansell et al., 1999; Mansell et al., 2003). This suggests that the expectation of being negatively evaluated and the state anxiety that accompanies this fear may be a moderating factor in the presence of the attention bias toward threatening stimuli.

Self-Affirmation and Defensive Bias

One area of research that has focused on reducing defensive bias (in the domains of both social and health psychology) in response to threats to the self is Self-Affirmation (SA) theory (Harris & Napper, 2005). Although SA theory has been used primarily in research exploring biased information processing, it has also been used in the research of cognitive dissonance, causal attributions, prejudice and stereotyping, stress and rumination (Sherman and Cohen, 2006), which suggests that it might also be applied to the study of attentional bias in social anxiety.

SA theory developed from the realisation that people face numerous threats to the self and the possibility of failure in their day to day lives and is based upon the premise that in the face of these threats, one is motivated to maintain their self integrity and worth. According to SA theory, integrity refers to a feeling that one is a good and appropriate person in terms of meeting the norms and standards that are set out for them within their cultural or social group (Sherman & Cohen, 2006). Consequently, these standards vary across cultures, situations and specific group identification.

Integrity can be threatened, however as the self is made up of a number of domains including individual roles (e.g. as a parent), values (such as being a good friend), belief systems (e.g. being a Christian), social identities (membership to a particular group) and people's goals (e.g. being good at school). So when any information is encountered that indicates that someone is not meeting the standards set out by themselves, their culture or social group in one of these domains, that person's self- integrity is threatened. For example, the ability to be confident in a social situation may be central for one to maintain self-integrity in some groups and cultures, thus making anxiety and being negatively evaluated in social situations a threat to one's self-integrity. According to Sherman and Cohen (2006) people are particularly vigilant to situations or information which may threaten self-integrity and this vigilance extends to how others perceive this threat to the individual's self-integrity also. This suggests that self-integrity may be able to be threatened by the perception that others are making negative evaluations about a specific personal domain.

According to SA theory, when self-integrity is threatened there are three ways that the individual can respond (Sherman & Cohen, 2006). They can accommodate the

threat by accepting their inability to meet a particular standard and use this as a basis for change. The likelihood of the individual accommodating the threat is largely dependent on how important the area of threat is to the person's self identity, as the more important it is, the less likely they will be willing to accept their failure in this area and change their attitude or behaviour. More frequently, people use defensive biases to deal with such threats to self integrity. Defensive biases are seen as psychological adaptations that allow a person to protect their self-integrity when it is threatened by decreasing the threat (Sherman & Cohen, 2006). Although these biases may be beneficial to the individual both psychologically and physically in the short term, in the long term they may impede the individual learning important information from their experiences or available information. For example, a socially anxious person who avoids stimuli linked to negative evaluation (a defensive bias) may experience a reduction in anxiety and protect self-integrity in the short term, but this behaviour may lead to their anxiety being maintained in the long term because they are unable to re-appraise the stimuli as being non-threatening. Defensive biases come in many forms, from dismissing information that is indicative of them acting unwisely to dis-identifying with areas of importance in which their skills are lacking in an attempt to protect their self-worth in case of failure.

SA theory posits that there is a third way in which they person can respond and that is by compensating for failures by placing an emphasis on their successes in another domain (Sherman and Cohen, 2006). That is, an individual is assumed to be able to affirm alternative self resources unrelated to the threat at hand which reduces defensive bias because the individual then realises that their self-worth is not contingent upon the implications of the current threat. For example, a person who is reading a pamphlet

about the health risks of binge drinking and engages in this behaviour may be likely to dismiss the information, however if they are first affirmed in an unrelated domain (how they are valued as being an honest person for example), they are more likely to read the information in an unbiased fashion. This allows for the individual to both maintain their self-integrity and can lead to adaptive attitudinal or behaviour change. This effect is the basis of numerous SA studies that uses SA manipulation. SA manipulation has generally been done through activities that make the individual more aware or attentive to important values unrelated to the threat at hand or through the reflection of important parts of one's life unrelated the current threat (Klein & Harris, 2009). More recent manipulation tasks have involved the individual reflecting on how they would respond if their integrity was threatened (Armitage, Harris and Arden, 2011).

Much of the research in this area has focused on how people respond to messages about health risks. According to the SA paradigm, the reason that this is threatening to self-integrity is because it suggests that the person has acted foolishly or that they are an unhealthy person (Sherman & Cohen, 2006). So for example, if a smoker reads about the risks of developing lung cancer from smoking, they are likely to act in a defensive manner and as such are unable to process the message in a way that may lead to behaviour change. However, research has indicated that if the person self-affirms by focusing on resources in an unrelated domain (how they are a good parent for example), they may act less defensively and be able to process the information in an unbiased fashion. This effect has been exhibited in a large number of studies to date. For example, Harris and Napper (2005) investigated the role of SA manipulation on individuals reading a threatening health message linking breast cancer and alcohol

consumption. They found that individuals who had completed a SA manipulation task in which they were asked to select their most important value and write about how they use it in their daily life and why it was important to them prior to reading the threatening messages were more open to the information contained in the report. These individuals also exhibited more intention to decrease alcohol consumption than those who had not been self-affirmed prior to reading the message (who were more resistant and critical of the message). Importantly, this effect was only found for those to whom perceived their risk as being higher indicating that the threat must be personally relevant for SA manipulation to be effective in reducing defensive bias. The finding that SA activities can reduce a defensive bias to threatening health information and provoke intention to change has been replicated in a number of other studies focusing on a number of health risks including excessive caffeine consumption, smoking and unsafe sex (Harris, Mayle, Mabbott & Napper, 2007; Sherman, Nelson & Steele, 2000).

Outside of research related to health risks, a study by Van Dijk, van Koningsbruggen, Ouwerkerk and Wesseling (2011) indicated that SA has particular implications in the interpersonal domain in terms of decreasing threat to the self in demonstrating that individuals with low self-esteem, when faced with a high-achiever, experienced less pleasure at the misfortune of the high achiever when given an opportunity to self-affirm themselves. This was explained as the high achiever evoking self-threat within the individual with low self-esteem and that an opportunity to self-affirm decreases a defensive reaction to the self-threat. As such, experiencing pleasure at the misfortune of the high achiever acts as a defensive mechanism similar to an

avoidance response in which the individual shifts attention from their own perceived weaknesses to someone else's.

Self-Affirmation and Attention Bias

Few studies to date have looked directly at the processes involved in how SA reduces this defensive bias toward threatening information. Those that have, however indicate that a reduction in attention bias toward threatening information may be the key to the success of self-affirmation manipulation in its reduction of defensive biases. A study by Harris and Klein (2009), exposed female alcohol consumers to an article linking alcohol to breast cancer. Following this exposure, participants were either exposed to a SA condition or a control condition and then completed a dot probe task in which threatening words from the article were presented amongst a number of other threatening words and neutral words. This study found that amongst moderately heavy drinkers, individuals in the SA condition displayed an attention bias towards (as indicated by shorter latency times) the threatening words whereas those in the control condition exhibited the opposite effect (an attention bias away from threatening words). This effect was also only found for the words presented within the article indicating that the effect was specific to fear congruent stimuli alone.

This effect was supported by Van Koningsbruggen, Das and Roskos-Ewoldsen (2009) who found that coffee drinkers that had been self affirmed responded to threat related words taken from a health message on the effects of caffeine on health more quickly than those who had not been self affirmed. Those who had not been affirmed showed the opposite effect. Both of these studies suggest that self-affirming increases

the accessibility of threat related cognitions by reducing a defensive bias and as such allows the individual to process the threat at hand.

The Current Study

Despite the above studies indicating that SA appears to play a role in mitigating an attention bias toward personally relevant threatening information no studies have explored SA in a clinical population. This is surprising considering that it has been proposed that defensive processing of threatening information occurs in an attempt to decrease anxiety as well as protect positive views of the self (Schmeichel & Vohs, 2009) and a plethora of research suggests that anxiety interferes with an individual's ability to both understand and utilise information about health risks (Reed and Aspinwall, 1998). Despite anxiety being continually mentioned as playing a part in this process and previous SA studies indicating that SA manipulation is directly mitigating an attention bias toward threatening stimuli, no studies have specifically investigated the potential moderating effects of SA manipulation on anxiety and if it is able to decrease information processing biases in an individual that is experiencing a threat to the self.

Therefore, the intention of the current study is to explore the possible moderating effects of SA manipulation on the attention bias exhibited in individuals with Social anxiety. Social anxiety has a particularly high relevance in relation to SA studies as it is often linked to negative self-perception, higher frequency of self-critical thoughts and negative self-appraisal, indicating that fear congruent threats may in fact present a threat to self-integrity. Furthermore, being socially anxious would likely present a threat to self-integrity as the ability to form relationships and be socially competent is important in most cultures. As such, the attention bias elicited by socially threatening information

acts as a defensive response in order to protect the individuals self-integrity as well as decrease state anxiety in response to threatening information. Based upon this, there is a possibility that SA manipulation will be able to produce a similar effect in reducing the attention bias in social anxiety when exposed to socially threatening information.

As the population being studied are individuals who experience varying levels of social anxiety, this study will be delivered to participants fully through online administration. Research has indicated that individuals with social anxiety have a preference for online communication over face to face communication (Caplan, 2007) and it is hoped that this will attract individuals with social anxiety to the study. To date, it appears that this is the first study to do this in the investigation of the attention bias in social anxiety using the emotional Stroop task. It is unexpected that this mode of study delivery will affect the outcome of the study as previous researchers have successfully used computerised versions of the emotional Stroop task when looking at the attention bias in individual high in psychological distress (Kambouropoulos & Knowles, 2005). In fact it is expected that delivering the study through this modality will be an asset considering the population being studied and may provide access to a population that would not participate in studies requiring face to face contact.

Summary and Aim of the Current Study

In summary, research on the attention bias in social anxiety suggests that individuals high in social anxiety tend to exhibit a hypervigilance-avoidance response of words related to negative evaluation, self-schemata and self-evaluation. Previous research purports that self-affirmation may reduce an avoidant defensive bias toward personally relevant threatening information resulting in individuals responding more

quickly and openly to this information. No studies to date have explored whether SA manipulation is able to reduce the attention bias exhibited in individuals with high levels of social anxiety. In particular, this study is interested in the effect of SA manipulation on the attention bias in those with high social anxiety as this presents a particular threat to the person's self-integrity. As such, the aim of the current study is to explore the possible moderating effects of SA manipulation on the attention bias in individuals with high social anxiety. It will be guided by the hypothesis that individuals who are high in social anxiety and have been self-affirmed will respond more quickly to fear congruent threatening words presented in an emotional Stroop colour naming task than those who have not been self-affirmed. Those low in social anxiety are not expected to respond differently regardless of the experimental condition that they complete.

Method

Participants

Participants were 150 individual's aged 18 to 71 years of age. The mean age of participants was 26.53 years ($SD = 10.99$). Undergraduate students were recruited through advertisements in first year psychology lectures, through the distribution of posters around the University of Tasmania campuses (see Appendix A) and through advertisements on the University of Tasmania website. Participants from the general community were also recruited through the distribution of posters around the University of Tasmania campuses and through advertisements placed in relevant online forums and at community venues. Participants were offered the chance to win one of three Coles-Myer shopping vouchers or gain 90 minutes course credit (for University of Tasmania first year undergraduate students) for participating in the study.

Materials and Procedure

Participants were invited to take part in an online study on Social Aspects of Thinking. Upon entering the webpage for this study, each participant was initially presented with an information sheet (Appendix B) and consent form (Appendix C) and were required to press 'continue' if they wished to participate in the study.

Before answering any questionnaires, participants were required to enter a unique identifier consisting of the last 3 digits of their phone number and the first initial of their mother or father's name. This was done in order to allow participant's data to be matched up across the two parts of the study. Following this, participants answered a number of demographic questions and then completed questionnaires pertaining to depression and social anxiety. These questionnaires were made available through the use of *Limesurvey*(2012) software.

At the completion of these tasks, participants were directed to access the second part of the study by clicking a URL address. There, they were randomly assigned to undergo either a self-affirmation (SA) manipulation condition or control condition before completing the outcome measure; an emotional Stroop task . Figure 1 shows the flow of participants throughout the study. These measures were made available through the use of *Inquisit*(2012) software.

Following the completion of the outcome measure, participants were directed to a page with the contact information of phone, face to face and internet based services that were available to them if they wanted to discuss anything further or wished to seek help regarding mental health issues. Participants were also required to enter their email address if they wished to gain course credit or enter the draw to win an online shopping

voucher. This study had full ethics approval from the Human Research Ethics Committee (Tasmania) network, reference number H0012796 (see Appendix D).

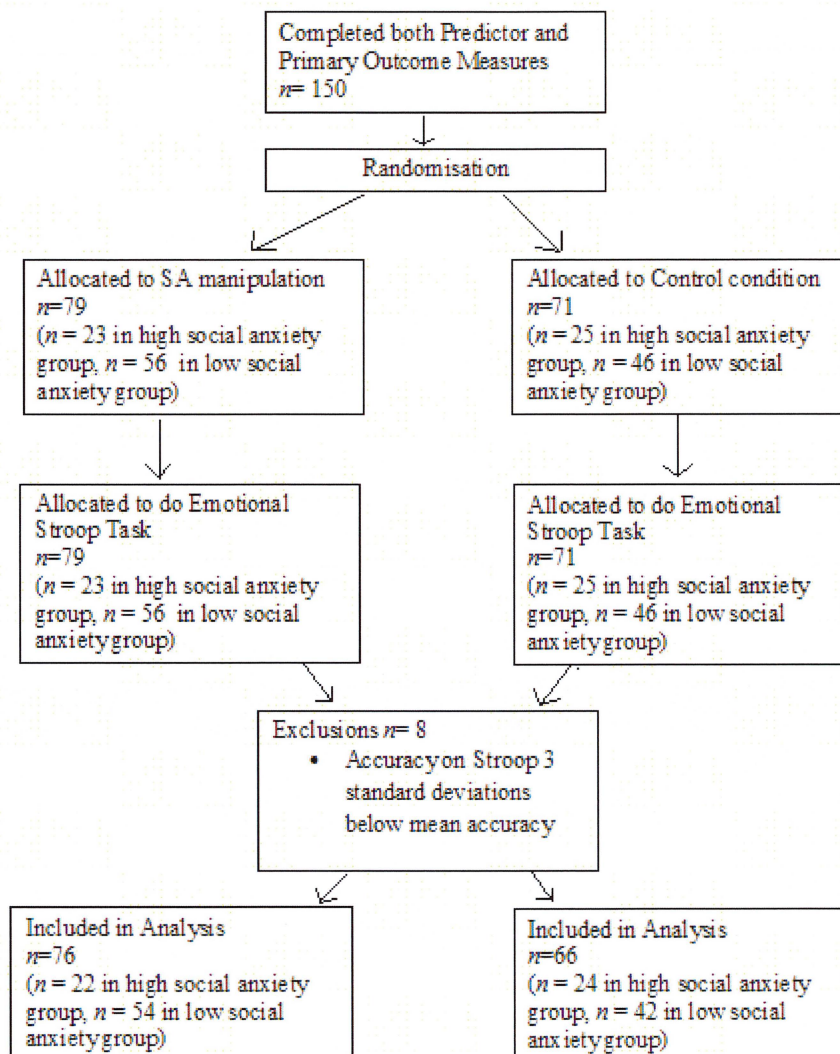


Figure 1. Participant flow throughout study

Primary Outcome

Emotional Stroop task: In order to measure the impact of experimental manipulation on attention bias in those both high and low in social anxiety, an emotional Stroop task was used. Administration and social threat words selected were negative social threat words that had previously been found to provoke an attention bias in

individuals with Social Phobia using the emotional Stroop task (Hope, Rapee, Heimberg and Dombeck, 1990) and high socially anxious individuals using a modified dot-probe task (Vassilopoulos, 2005). Words consisted of 10 threat words and 10 neutral words (see Appendix E) matched for letter and syllable length were presented in four colours (Red, blue, green, yellow). Each colour-word pair was displayed twice, resulting in a total of 160 trials for each participant. Order of words and colours were randomised for each participant and stimulus words were presented in the centre of a white screen in size 28 Arial font. Participants were required to press a letter (k=yellow, j=blue, f=green, d=red) to indicate the colour that the word was printed in and a reminder of these letters and their corresponding colours was presented constantly throughout the task at the top of the page (see Appendix F). Average response latency in milliseconds and the percentage of correct responses for the social threat and control words were recorded from this task.

Consistent with previous studies in the area (Andersson et al., 2006; Lundh & Ost, 2001), an interference score was calculated to indicate any emotional interference caused by the social threat words. This was done by subtracting the mean latency time for the control words from the mean latency time for the social threat words for each participant

Predictors

Demographics. Participants were asked to answer questions pertaining to age, gender, relationship status, employment status and educational level by selecting the answer most relevant to them (Appendix G).

Social anxiety measure. The *Brief Fear of Negative Evaluation Scale* (BFNES; Leary, 1983) is a 12 item measure of social anxiety that assesses an individual's fear of receiving negative evaluation from others. The perception that one is being negatively evaluated by others is a central characteristic of social anxiety and social phobia (Bögels & Mansell, 2004).

The BFNES consists of 12 items and participants were required to answer each of the 12 statements (e.g. *'I often worry that I will say or do the wrong things'*) by selecting a number on a scale of 1 (*not characteristic of me*) to 4 (*extremely characteristic of me*). In undergraduate samples, the BFNES has previously been reported to have good internal reliability with alpha's of 0.90-0.91 (Leary, 1983) and good test-retest reliability with correlations of .75 (Leary, 1983). Studies have also indicated that the BFNES has high convergent validity with a number of theoretically related measures (Rodebaugh et al., 2004) such as the Social Phobia Scale and the Social Interaction Anxiety Scale (Mattick & Clarke, 1998).

Based on previous literature suggesting that a subset of eight straightforwardly-worded items of the BFNES (items 3, 5, 6, 8, 9, 11 & 12; see Appendix G) are more reliable and valid at indicating fear of negative evaluation than the original 12 items in both clinical and undergraduate samples (Rodebaugh et al., 2004), the current study only included responses to the eight straightforwardly worded items in the final analysis. Further to this, a principle component analysis with a varimax rotation indicated two underlying factors for the 12 item BFNES (see Appendix H). The eight straightforward items loaded onto factor 1 which explained 55.23% of the variance in scores. The remaining four negatively worded items explained a further 15.38% of the variance in

scores. The finding that the 12 item BFNES comprises two underlying factors is consistent with previous research (Rodebaugh et al., 2004). The BFNES-straightforwardly worded items have been found to have excellent internal consistency, with alphas of .92 and above and excellent construct validity in both undergraduate and clinical samples (Rodebaugh et al., 2004; Weeks et al., 2005). Consistent with previous research, a clinical cut-off score of 25 was used to distinguish individuals high and low in social anxiety (Carleton, Collimore, McCabe & Antony, 2011).

Depression measure. The *Beck Depression Inventory II* (BDI-II; Beck, Steer & Brown, 1996) is a 21 item self-report measure that measures both the presence and severity of depressive symptoms in the previous 2 weeks before testing, including the day of testing. Participants were required to rate themselves on a four point scale ranging from 0-3 on 21 depressive symptoms (e.g. loss of pleasure; sadness; pessimism) where higher scores reflect higher levels of depressive symptoms. Overall, the BDI-II is scored by summing the ratings for the 21 items. Scores of 0-13 indicate minimal depressive symptoms, 14-19 indicates mild depressive symptoms, 20-28 indicates moderate depressive symptoms, and scores of 29-63 indicates severe depressive symptoms (Beck, et al., 1996). The BDI-II has previously demonstrated good internal reliability in both undergraduate and wider samples ($r=.92$ and $r=.86$, respectively; Segal, Frederick, Cahill & O'Riley, 2008) as well as good concurrent validity with a number of other depression measures (Storch, Roberti & Roth, 2004). Furthermore, computerised and pen and paper versions of the BDI-II have been found to be equivalent in measurement validity (Schulenberg & Yutrzenka, 2001). Previous studies indicate that comorbid depression and anxiety may obscure or account for some of the attention

bias exhibited by individuals with social phobia (Musa, Lepine, Clark, Mansell & Ehlers, 2003). As such this will be controlled for in the current study by including participant's depression scores as a covariate in the final analysis.

Experimental intervention. *Self Affirmation/ Control Task:* SA was manipulated by having participants undergo a brief self-affirmation task developed by Armitage, Harris and Arden (2011). This task required participants to complete the stem "*If I feel threatened or anxious then I will....*". Participants were presented with four options in order to complete the stem; "*...think about the things I value about myself,*" "*...remember things that I have succeeded in,*" "*...think about what I stand for,*" and "*...think about things that are important to me*". Participants were asked to then type out their option in an open dialogue box (see Appendix I).

The control task required participants to answer 10 questions unrelated to anything self-relevant (Reed and Aspinwall, 1998) such as "*I think the colour blue looks good on most people*". Participants responded by selecting either a 'yes' or 'no' response. When participants responded 'yes' they were asked to elaborate upon their response in an open dialogue box (see Appendix J).

A study by Armitage, Harris and Arden (2011) indicated that the brief SA manipulation used in this study is at least as effective at producing a self-affirming effect as other SA manipulations and is less reliant on verbal fluency than other self-affirmation manipulation procedures. This study also indicated that the control task did not produce a self-affirming effect and as such is effective as a control task for the experimental condition.

Design and Data Analysis

This study employed a 2 (Social anxiety: high, low) by 2 (Condition: SA, control condition) between subjects design. The dependent variable was the individual's social threat interference score, calculated by subtracting each participants mean latency time for control words from their mean latency time for social threat words. Interference scores were measured in milliseconds(ms). Positive scores were indicative of an emotional interference effect for social threat words and indicate that participants took longer to name the word colour for social threat words than control words. Depression was included as a covariate in the analysis based on previous research indicating that this may account for or obscure an attention bias. Data was analysed using a between-subjects analysis of covariance (ANCOVA), with significance levels being set at $p < .05$.

To calculate effect sizes, partial eta squared was used. In order to check for any violations of ANCOVA assumptions, tests of homogeneity of variance and normality were conducted, and the relevant non-parametric statistic was used in place of the original statistic in the case of a significant violation of either assumption. Independence of the covariate and treatment effect was tested by conducting a One-Way ANOVA with depression as the dependent variable.

Univariate outlier trials (latency times of 3 standard deviations above or below each individual's mean social threat or control latency time for an individual trial) were removed from analysis. This resulted in 483 individual responses out of 24,000 (2.01%) being removed before final analysis.

Results

Demographics

The initial sample of the study comprised 150 participants. Participants were excluded from final analysis if they scored 3 standard deviations below their overall mean accuracy on social threat words and control words. This was done in order to include only participants that understood the instructions of the task and took the task seriously. On this basis, 8 participants were excluded from final analysis.

This left a sample of data from 142 participants (aged 18-71 years, $M=26.66$, $SD=10.94$), 101 of which were female and 41 were male. Of the participants, 62.5% were aged 18 to 25 years, 31.9% were 25 to 50 years and the remaining 5.6% were over age 50. Of these participants, 17.4% reported being married, 4.9% dating, 13.2% in a defacto relationship, 31.3% reported being single and 29.9% selected 'other' as their relationship status. Furthermore, 11.8% of participants reported an educational level of Year 10 or below, 38.2% had achieved a year 12 education, 13.9% had completed a TAFE course, and 32.6% reported having completed an undergraduate or postgraduate university degree. The remaining 3.5% of participants selected 'other training certificates' as being their highest level of education. In terms of employment, 16.7% of participants were employed full-time, 11.8% were employed part-time, 34% were employed casually and 32.6% were currently unemployed.

In comparison to the general Australian population (Australian Bureau of Statistics, 2012), the current study had comparable levels of people listing year 12 or below as their highest educational level. The levels of people reporting their highest

level of educational achievement as a training certificate of some kind is also comparable. However, the current study contained considerably higher levels of individuals that listed an undergraduate degree as their highest level of educational attainment. The unemployment rate of the study sample is also considerably higher than the Australian population, possibly due to the sample containing high numbers of university students, however the exact number of students participating was not measured.

Descriptive Statistics

Participants were distinguished as being either high ($n=46$) or low ($n=96$) in social anxiety based on a clinical cut-off score of 25 for the straightforward items of the BFNES (Carelton et al., 2011). Participants were randomly allocated to either the SA manipulation condition ($n=76$) or the control condition ($n=66$). Of the participants in the high social anxiety group, 22 completed the SA manipulation condition and 24 underwent the control condition. In the low social anxiety group, 54 participants completed the SA manipulation condition and 42 underwent the control condition. The mean interference score for the low and high social anxiety groups (with standard deviations in parentheses) were 1.40 ms ($SD = 114.37$), and 16.40 ms (94.05) respectively. The mean interference score for the SA experimental condition group was 8.76 ms ($SD=121.80$) and for the control group was 3.38ms ($SD=90.65$). The mean interference score for the low social anxiety group in the SA and control experimental conditions were 1.27 ms ($SD=126.47$) and 1.60 ms ($SD=98.15$) respectively. For the high social anxiety group, participants scored a mean interference score of 27.14 ms

($SD=110.06$) for the SA condition and mean of 6.55 ms ($SD=77.69$) for the control condition (See Figure 2; Appendix K1).

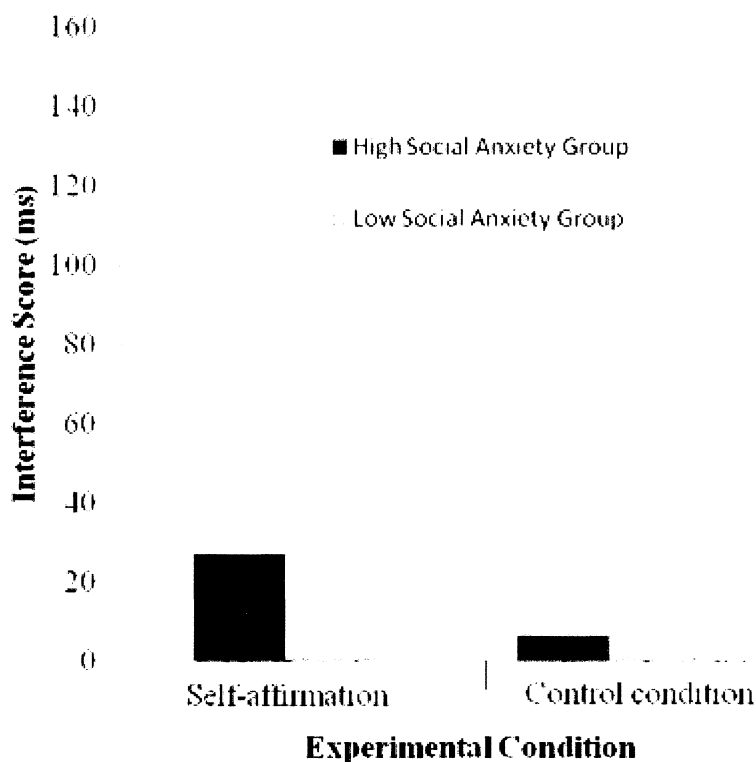


Figure 2. Mean Interference scores of high and low social anxiety groups after SA manipulation or control conditions.

Randomisation and Confounding Variables Checks

Separate one-way analyses of variance (ANOVAs) were run on the data to examine if participants were evenly distributed between groups in the social anxiety and experimental groups in terms of age, relationship status, employment status and education level. These ANOVAs revealed no significant differences between the high and low social anxiety group in terms of age, relationship status, employment status and educational status ($p>.05$; see Appendix K2). Separate one way ANOVAs also indicated

that participants in the control and SA experimental groups also did not differ significantly on any of the aforementioned characteristics ($p > .05$; see Appendix K3).

Testing ANCOVA assumptions

In order to assess whether variances between groups were equal, Levene's test of homogeneity of variances was used. This test emerged non-significant, $F = .291$, $p = .832$, indicating that equality of variances can be assumed for the data. In order to investigate if the data was normally distributed within groups, skewness and kurtosis were analysed. These analyses indicated that the data slightly violates the assumption of normality with skewness of .748 ($SE = .203$) and kurtosis of 8.127 ($SE = .404$). However, due to between subjects ANCOVA calculations being robust against violations of normality, no transformations were made to the data.

In order to test whether the assumption of independence of the covariate and treatment effect was met, a one way ANOVA with depression as the dependent variable was run (Appendix K4). This revealed that this assumption was not met as there were significant differences between the low and high social anxiety groups in depression scores $F(1,138) = 45.99$, $p < .001$. The high social anxiety group reported significantly higher levels of depression when compared to the low social anxiety group. This is to be expected within the population being studied. No significant differences were found in depression scores between the SA manipulation condition and control condition $F(1,138) = 1.82$, $p > .05$. Despite the assumption of the independence of the covariate and treatment effect being violated in relation to social anxiety group, no adjustments were made to the data because participants were then randomised to experimental groups and

the primary hypothesis relates to the social anxiety group x experimental condition interaction.

Between Subjects ANCOVA

Table 1 represents the estimated marginal means for interference scores for the high and low social anxiety groups, SA and control experimental groups and the social anxiety by experimental group interaction. A 2x2 between subjects ANCOVA [between subjects factors: social anxiety group (high, low) and experimental condition (self-affirmation, control); covariate: depression], revealed that the social anxiety group by experimental manipulation condition interaction was not significant, $F(1, 137) = .277$, $p > .05$, $\eta_p^2 = .002$, which indicates that the relationship between participants interference scores and social anxiety levels was not moderated by exposure to self-affirmation. Further to this, no main effects were found for social anxiety group, $F(1, 137) = .366$, $p > .05$, $\eta_p^2 = .003$ or experimental condition, $F(1, 137) = .246$, $p > .05$, $\eta_p^2 = .002$, indicating there were no significant differences in interference scores depending on social anxiety level or experimental condition (Appendix K5).

Table 1.

*Estimated Interference Score Marginal Means for Social Anxiety Group, Experimental Group and Social Anxiety * Experimental Group Interaction.*

Social Anxiety Group	Experimental Condition	<i>M</i>	<i>SD</i>	95% Confidence Interval
High	Self-Affirmation	25.78	15.15	-23.67-75.22
	Control	5.62	23.14	-40.14- 51.38
	Total	15.70	17.84	-19.57- 50.97
Low	Self-Affirmation	1.71	15.15	-28.26-31.67
	Control	2.25	17.46	-32.27-36.76
	Total	1.98	11.84	-21.44-25.40
Total	Self-Affirmation	13.74	14.16	-14.25-41.74
	Control	3.93	14.00	-23.76-31.63
	Total	8.84	10.02	-10.975-28.65

Discussion

It has been consistently found that individuals with social anxiety exhibit an attentional bias toward socially threatening information, an information processing bias that plays a pivotal role in both the cause and maintenance of social anxiety symptoms (Bögels &

Mansell, 2004). Despite this well-evidenced finding, few studies have looked directly at how this attentional bias can be mitigated without the help of intensive therapeutic intervention. One area of research that has looked at reducing an attention bias (often referred to as a defensive bias in this area) in relation to both health and cognitive related threats to the self is self-affirmation. Research in this area suggests that by focusing on a personal value or cherished aspect of oneself that is unrelated to the current threat is able to reduce a defensive bias toward personally-relevant threatening information. This study aimed to investigate if this is able to produce a similar effect in being able to decrease the attentional bias in a socially anxious population. . It was hypothesised that individuals high in social anxiety who have been self-affirmed would respond more quickly to fear-congruent threatening words (in this case socially evaluative words) presented in an emotional Stroop colour naming task than those who have not been self-affirmed.

The results did not provide support for this hypothesis. That is, individuals who were high in social anxiety and were self- affirmed did not differ significantly from those who completed the control task. Furthermore, those high in social anxiety did not take longer to name the print colour of social threat words in comparison to those low in social anxiety as expected based on previous research.

Main Effect of High versus Low social anxiety group

As indicated in the results section, there were no significant differences in interference scores for individuals high in social anxiety when compared to those low in social anxiety. This effect was not expected taking into account previous literature indicating that individuals high in social anxiety take longer to respond to social threat

words when compared with low socially anxious individuals (Mogg & Bradley, 2002; Vassilopoulos, 2005).

Despite this finding being inconsistent with much research on the attention bias in individuals high in social anxiety, it is consistent with previous studies that have indicated that when no social evaluative threat is present, there are no differences in attention between high and low socially anxious individuals. Mansell and colleagues (1999), conducted a study in which high and low socially anxious individuals underwent either a social evaluative threat condition (being told that they would have to make a public speech on a controversial topic) or a no evaluative threat condition prior to completing a modified dot probe task using faces. They found that an attentional bias for individuals high in social anxiety could be observed only under conditions of social-evaluative threat. In the absence of social evaluative threat, individuals high and low in social anxiety did not differ in their attention to emotional faces. This suggests that socially anxious individuals only seem to display an attentional bias when others are present who can evaluate them or if they have an expectation that they will be evaluated by others. For the current study, this means that there is the possibility that by delivering the study online, the expectation of being negatively evaluated and the resulting anxiety could have been decreased in those high in social anxiety, leading to no differences in emotional interference when compared to the low social anxiety group. Consistent with this view is the finding that individuals high in social anxiety who exhibit an attentional bias toward social threat stimuli also exhibit higher levels of state anxiety at the time of the study (Vassilopoulos, 2005; Mansell et al., 1999; Mogg & Bradley, 2002). This indicates that higher levels of state anxiety may be necessary for an

attentional bias to be observed. As no measure of state anxiety was included in the current study, there is a possibility that those high in social anxiety did not experience enough threat in relation to the social threat words which may account for an attentional bias not being exhibited.

Supporting this, a study looking at the effect of state versus trait anxiety on emotional interference in response to neutral, negative and positive words using the emotional Stroop task, (Dresler, Meriau, Heekeren and van der Meer, 2008) found that emotional interference was enhanced in participants high in state anxiety, but no influence of trait anxiety was found. They explained this as state anxiety exacerbating the interference toward emotional words because it is consistent with emotionally salient stimuli. This indicates that an individual's level of anxiety whilst doing a task may be more predictive of an individual engaging in information processing biases such as an attentional bias toward threatening information than any stable tendency to respond to certain threats with anxiety. In relation to the current study, this suggests that the online delivery of information and the absence of expectation of social evaluation accompanying this mode of delivery may have lead those high in social anxiety to experience low state anxiety and threat so that there was no attentional bias in processing the social threat words.

An emerging area of research is currently exploring internet usage and social anxiety. From this, a number of studies have indicated that online communication might present a less threatening and anxiety provoking means of communication for individuals with social anxiety (Weidman et al., 2012; Caplan, 2007). Studies in this area have also indicated that there is a distinct connection between levels of social

anxiety and internet usage, in that people with higher levels of social anxiety have stronger preferences for online communication over face to face communication (Caplan, 2007), but the factors that lead to this have yet to be established. According to Lee & Stapinski (2012), individuals with social anxiety disorder are more comfortable using online forms of communication because face to face interactions lead to high levels of fear and anticipation of threat and negative evaluation. This view is also supported by Miller (as cited in Weidman et al., 2012, p.2) who also suggests that online communication decreases social evaluative fear, a key feature in the maintenance of social anxiety. A study by Weidman and colleagues (2012) suggests that individuals high in social anxiety feel more comfortable when communicating online and use the internet as a place to self-disclose more than in offline contexts, and that although such behaviour may be associated with poorer wellbeing, it presents a more comfortable environment for individuals high in social anxiety. This comfort and lack of social evaluative fear that individuals high in social anxiety report to experience indicates that delivering content online may be less anxiety provoking than a face to face delivery. As such, in the current study, delivering the content online may not have been provoking social evaluative threat, whereas previous studies that found an attention bias toward threatening words in individuals high in social anxiety have always employed face to face contact with an experimenter prior to completion of the task thus possibly provoking evaluative threat. Based upon this, there is a possibility that individuals high in social anxiety did not experience high enough levels of state anxiety in response to social threat words because of the chosen mode of delivery.

Main effect of Self-Affirmation

As indicated, there was no main effect observed for the self-affirmation manipulation. This indicates that self-affirmed individuals did not differ significantly in interference scores from those in the control condition.

It was not expected that there would be a main effect for self-affirmation on interference, as previous research suggests that self-affirmation is mainly effective in reducing an attention bias or defensive bias in individuals to whom the threatening message presented a personally relevant threat (Harris & Napper, 2005). As individuals were randomly allocated to the experimental conditions, individuals of differing social anxiety levels were distributed relatively evenly. As such, it was unlikely that there would be significant differences in interference scores based purely on experimental manipulation group in the present study.

Social anxiety x Self-Affirmation Interaction

It was expected that there would be an interaction effect between social anxiety group and self-affirmation; however the results of the study did not reflect this. This result is most likely due to the finding that individuals high in social anxiety did not differ significantly in interference scores from those with low social anxiety. As such, it was unable to be tested as to whether a SA manipulation condition was able to produce any reduction in interference scores for this group. This expectation was based upon previous research that indicated that self-affirmation in fact could reduce an attention bias toward personally relevant threatening information (Harris and Klein, 2009; Van Koningbruggen et al., 2009). However, as this study would have been the first to explore self-affirmation within the context of social anxiety, with previous research focussing

predominately on non-clinical populations where the threats were either cognitive or health related, or challenges to one attitudes or values, it is difficult to speculate as to what would have been found had the primary outcome measure been effective.

Limitations

Some methodological limitations warrant consideration. Firstly, as the task was administered online, a number of extraneous variables could have possibly influenced the task and could not be controlled for. As such, factors such as noise levels, interruptions, time of day administered and other environmental factors may have influenced the participant's responses on the tasks involved in the study, but were out of reach for the experimenter. Further to this, participation in the study required access to reliable internet and basic computer knowledge which might have excluded some participants or possibly lead to high anxiety states related to computer use.

A second limitation may lie in the use of the Stroop task as a measure of attentional bias. Although used widely in the study of attentional bias in a number of populations, the emotional Stroop task has been criticised in its ability to identify what kind of attentional bias response an interference score is identifying, hypervigilance or avoidance, as both would lead to longer latency times (Bogels & Mansell, 2004). Others have questioned whether longer latency times are reflective of a selective attention bias toward the threatening words or rather indicate mental pre-occupation with themes related to the emotional words which in turn lead to longer latency times (Wells and Matthews, 1994). As such despite being utilised extensively as a measure of attentional bias, the emotional Stroop task may be an inexact measure of attention.

Furthermore, although the emotional Stroop task has been administered widely on a computer, only a few studies have implemented the Stroop task as an online study. This introduces a few factors which may have influenced participant's responses. Firstly, participants were not able to clarify instructions at any stage throughout the study. Secondly, as few studies have used online emotional Stroop task administration, research looking at the validation of this task when administered online is required. One study that did deliver the emotional stroop task online found that individuals high in psychological distress did exhibit an attentional bias toward emotional words when compared to those low in psychological distress (Kambouropoulos & Knowles, 2005). This study would suggest then, that the emotional Stroop task is able to detect attentional bias even when delivered online, however it is important to note that the population being studied is a distinctly different sample from the one in this study.

Another limitation lies within the sample itself. As the sample was relatively restricted to University students and were primarily female, the results of this study may not be able to be generalised to the general population.

Lastly, this study did not include a measure of state anxiety. Other studies looking at attention bias in social anxiety have found that individuals that are in the high social anxiety group score higher in a state and trait measure of anxiety as well as other measures of anxiety (Vassilopoulos, 2009; Mansell et al., 1999; Mogg & Bradley, 2002). This study would have been strengthened by including a measure of state anxiety in order to identify levels of anxiety being experienced by the participants throughout the study. It could also have been improved by the inclusion of another measure of social anxiety.

Strengths and Implications for Future Directions

Although the main hypothesis of this study was not supported, there were a number of promising findings that emerged from this study. Firstly, this was the first study to our knowledge to explore the attention bias exhibited in individuals high in social anxiety wholly through an online administration. Possibly because of this, this study was able to recruit a relatively high number of individuals that met a clinical cut off for social anxiety using the BFNES-straightforward items (32%). This indicates that online studies present a good medium through which to recruit and administer studies to individuals high in social anxiety. It also may provide the opportunity to access a population of individuals who would be unlikely to participate in face to face research and therefore potentially expands the scope of the research looking at the attention bias in individuals high in social anxiety. So, although the online administration of the study led to some possible methodological limitations, considering the population being studied, online administration of studies involving individuals with high social anxiety should be considered.

The finding that no differences in attentional bias were found between those high and low in social anxiety in this study is certainly worthy of future research. This suggests that there may be a state anxiety component to this attentional bias which has not been explored directly in previous research.

Clinical Implications

This research has important implications for clinical settings. For one, the finding that no attention bias is present for individuals high in social anxiety in an online environment has a high importance in a practical setting, as it presents a means of

distributing information and therapy in a non-threatening setting. The absence of an attention bias also suggests that in an online setting, an individual high in social anxiety would be able to process this information in an objective, unbiased fashion thus making it a more effective line of treatment. This is particularly important considering that an estimated 80% of people with social anxiety disorder do not receive any type of treatment with fear of negative evaluation and social stigma listed as some of the reasons that this treatment is not sought (Yuen et al., 2013). In fact, research has indicated that online treatment programs for social anxiety have been effective (Yuen et al., 2013), however this is a relatively new area of research.

Despite being unable to test this in the current study, the ability of SA manipulation to reduce attention bias is certainly worthy of further investigation. As the attention bias in social anxiety plays a pivotal role in the maintenance of social anxiety, exploring ways in which the individual may be able to judge their surrounding in an unbiased way is paramount to understanding both the processes involved as well as possible ways to treat social anxiety.

Summary and Conclusion

Research has consistently found that individuals high in social anxiety show an attentional bias toward socially threatening stimuli, however few studies have investigated how this bias can be mitigated without therapy. In relation to health and cognitive threats, self-affirmation tasks in which the individual focuses on a personal value or important aspect of themselves has been found to be able to reduce an attention bias toward personally relevant threatening information. The current study aimed to

explore if self-affirmation could decrease the attentional bias in high socially anxious individuals in a similar manner.

To our knowledge, this was the first study to explore self-affirmation in a clinical population. However, the findings from the present study could not examine mitigating effects of self-affirmation due to no differences in attentional bias being exhibited between high and low socially anxious individuals. Because of this, it is unable to be determined if self affirmation is able to decrease this attentional bias.

This finding does, however have implications in relation to social anxiety and internet use. This was the first study to explore attentional bias in social anxiety wholly through online administration. The finding that the high socially anxious group showed no attentional bias suggests that the content was not threatening enough for the individual, potentially because it was delivered online. We purport that this may have occurred due to the individuals experiencing less anxiety because their fear of being negatively evaluated was not as high as would occur when participating in studies requiring face to face contact.

In summary, although present findings were unable to explore the hypothesis initially proposed, the results of this study nevertheless are promising as they suggest an area in which the attention bias in social anxiety may not be exhibited, namely an online setting. This could have important implications in a practical setting in terms of delivering effective online treatment for this particular population. Further to this, this finding suggests that there may be a state anxiety component to this attentional bias that is certainly worthy of future research.

References

- Andersson, G., Westoo, J., Johansson, L., & Carlbring, P. (2006). Cognitive bias via the internet: a comparison of web-based and standard emotional stroop tasks in social phobia. *Cognitive Behaviour Therapy*, 35 (1), 55-62. doi: 10.1080/16506070500372469
- Armitage, C. J., Harris, P. R., & Arden, M. A. (2011). Evidence that self-affirmation reduces alcohol consumption: Randomized exploratory trial with a new, brief means of self-affirming. *Health Psychology*. Advance online publication. doi: 10.1037/a0023738
- Australian Bureau of Statistics. (2012). *Education and Work, Australia (Catalogue no. 6227.0)*. Canberra: Author. Retrieved from <http://www.abs.gov.au/>
- Bar-Haim, Y., Lamy, D., Pergamin, L., Bickersmans-Kranenburg, M.J. & van IJzendoorn, M.H. (2007). Threat-related attentional bias in anxious and nonanxious individuals: A meta-analytic study. *Psychological Bulletin*, 133 (1), 1-24. doi: 10.1037/0033-2909.133.1.1
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *BDI-II, Beck Depression Inventory: Manual* (2nd ed.). Boston: Harcourt Brace.
- Bögels, S.M., & Mansell, W. (2004). Attention processes in the maintenance and treatment of social phobia: hypervigilance, avoidance and self-focused attention. *Clinical Psychology Review*, 24, 827-856. doi:10.1016/j.cpr.2004.06.005
- Caplan, S.C. (2007). Relations among loneliness, social anxiety, and problematic internet use. *Cyber Psychology and Behavior*, 10(2), 234-242. doi: 10.1089/cpb.2006.9963

- Carleton, R. N., Collimore, K. C., McCabe, R. E., & Antony, M. M. (2011). Addressing revisions to the Brief Fear of Negative Evaluation scale: Measuring fear of negative evaluation across anxiety and mood disorders. *Journal of Anxiety Disorders, 25*, 822-828. doi: 10.1016/j.janxdis.2011.04.002 doi: 10.1016/j.janxdis.2011.04.002
- Clark, D. M., & Wells, A. (1995). A cognitive model of social phobia. In R. G. Heimberg, M. R. Liebowitz, D. A. Hope, & F.R. Schneier (Eds.), *Social Phobia: Diagnosis, assessment, and treatment* (pp. 69–93). New York: Guilford Press.
- Dresler, T., Meriau, K., Heekeren, H.R., & van der Meer, E. (2009). Emotional Stroop task: effect of word arousal and subject anxiety on emotional interference. *Psychological Research PRPF: An International Journal of Perception, Attention, Memory, and Action, 73*(3), 364-371. doi: 10.1007/s00426-008-0154-6
- Harris, P.R., Mayle, K., Mabbott, L., & Napper, L. (2007). Self-Affirmation reduces smokers' defensiveness to graphic on-pack cigarette warning labels. *Health Psychology, 20*(4), 437-446. doi: 10.1037/0278-6133.26.4.437
- Harris, P.R., & Napper, L. (2005). Self-affirmation and biased processing of threatening health-risk information. *Personality and Social Psychology Bulletin, 31*(9), 1250-1263. Retrieved from <http://psp.sagepub.com/>
- Hope, D.A., Rapee, R.M., Heimberg, R.G., & Dombeck, M. (1990). Representations of the self in social phobia: vulnerability to social threat. *Cognitive Therapy and Research, 14* (2), 177-189. Retrieved from <http://www.springerlink.com/content/101589/?MUD=MP>

- Inquisit 3.0.6.0 [Computer software]. (2012). Seattle, WA: Millisecond Software LLC.
- Kambouropoulos, N., & Knowles, S. (2005). Psychological distress and responses to blocked and random presentation of the emotional Stroop stimuli; and online experiment. *E-Journal of Applied Psychology: Clinical and Social Issues*, 1(2), 3-8. Retrieved from <http://ojs.lib.swin.edu.au/index.php/ejap>
- Klein, W.M.P., & Harris, P.R. (2009). Self-Affirmation enhances attentional bias toward threatening components of a persuasive message. *Psychological Science*, 20(12), 1463-1467. Retrieved from http://www.psychologicalscience.org/index.php/publications/journals/psychological_science
- Leary, M.R. (1983). A brief version of the fear of negative evaluation scale. *Personality and Social Psychology Bulletin*, 9(3), 371-375. Retrieved from <http://psp.sagepub.com/>
- LimeSurvey Project Team / Carsten Schmitz (2012). LimeSurvey: An Open Source survey tool LimeSurvey Project Hamburg, Germany. Retrieved from <http://www.limesurvey.org>
- Lee, B.W., & Stapinski, L.A. (2012). Seeking safety on the internet: Relationship between social anxiety and problematic internet use. *Journal of Anxiety Disorders*, 26, 197–205. Retrieved from <http://www.journals.elsevier.com/journal-of-anxiety-disorders/>
- Lundh, L., & Ost, L. (2001). Attentional bias, self-consciousness and perfectionism in social phobia before and after cognitive-behaviour therapy. *Scandinavian*

- Journal of Behaviour Therapy*, 30(1), 4-16. Retrieved from
http://www.tandfonline.com/toc/sbeh19/18/2#.Uom9L_O4aUk
- Mansell, W., Clark, D. M., & Ehlers, A. (2003). Internal versus external attention in social anxiety: An investigation using a novel paradigm. *Behaviour Research and Therapy*, 41, 555–572. Retrieved from
<http://www.journals.elsevier.com/behaviour-research-and-therapy/>
- Mansell, W., Clark, D.M., Ehlers, A., & Chen, Y. (1999). Social anxiety and attention away from emotional faces. *Cognition and Emotion*, 16(6), 673-390.
doi.org/10.1080/026999399379032
- Matthews, A. (1990). Why worry? The cognitive function of anxiety. *Behaviour research and Therapy*, 28 (6), 455-468. Retrieved from
<http://www.journals.elsevier.com/behaviour-research-and-therapy/>
- Mattick, R.P., & Clarke, J.C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behavior Research and Therapy*, 36, 455-470. Retrieved from
<http://www.journals.elsevier.com/behaviour-research-and-therapy/>
- Mogg, K., & Bradley, B.P. (2002). Selective orienting of attention to masked threat faces in social anxiety. *Behaviour Research and Therapy*, 40, 1403-1414.
 Retrieved from www.elsevier.com/locate/brat
- Mogg, K., Bradley, B., De Bono, J. & Painter, M. (1997). Time course of attentional bias for threat information in non-clinical anxiety. *Behaviour Research and Therapy*, 35 (4), 297-303. Retrieved from <http://www.journals.elsevier.com/behaviour-research-and-therapy/>

- Musa, C., Lepine, J., Clark, D. M., Mansell, W., & Ehlers, A. (2003). Selective attention in social phobia: The effect of a concurrent depressive disorder. *Behaviour Research and Therapy*, 41, 1043–1054. Retrieved from <http://www.journals.elsevier.com/behaviour-research-and-therapy/>
- Ononaiye, M.S.P., Turpin, G., & Reidy, J.G. (2007). Attentional bias in social anxiety: Manipulation of stimulus duration and social-evaluative anxiety. *Cognitive Therapy and Research*, 31, 727-740. doi: 10.1007/s10608-006-9096-8
- Perowne, S., & Mansell, W. (2002). Social anxiety, self-focused attention, and the discrimination of negative, neutral and positive audience members by their non-verbal behaviours. *Behavioural and Cognitive Psychotherapy*, 30, 11-23. Retrieved from <http://journals.cambridge.org/action/displayJournal?jid=BCP>
- Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, 35, 741–756. Retrieved from www.elsevier.com/locate/brat
- Reed M.B., & Aspinwall, L.G. (1998). Self-Affirmation reduces biased processing of health-risk information. *Motivation and Emotion*, 22(2), 99-132. Retrieved from <http://www.springer.com/psychology/journal/11031>
- Rodebaugh, T. L., Woods, C. M., Thissen, D. M., Heimberg, R. G., Chambless, D. L., & Rapee, R. M. (2004). More information from fewer questions: The factor structure and item properties of the original and Brief Fear of Negative Evaluation scale. *Psychological Assessment*, 16, 169-181. doi: 10.1037/1040-3590.16.2.169

- Schmeichel, B.J., & Vohs, K. (2009). Self-affirmation and self-control: affirming core values counteracts ego depletion. *Journal of Personality and Social Psychology*, 96 (4), 770-782. doi: 10.1037/a0014635
- Schulenberg, S. E., & Yutzenka, B. A. (2001). Equivalence of computerized and conventional versions of the Beck Depression Inventory-II (BDI-II). *Current Psychology*, 20, 216-230. Retrieved from: <http://link.springer.com/journal/12144>
- Segal, D.L., Coolidge, F.L., Cahill, B. S., & O'Riley, A. (2008). Psychometric properties of the Beck DepressionInventory-II (BDI-II) among community-dwelling older adults, *Behavior Modification*. 32 (1), 3-20. doi: 10.1177/0145445507303833
- Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. *Advances in Experimental Social Psychology*, 38, 183-242. Retrieved from: <http://www.sciencedirect.com/science/bookseries/00652601/38>
- Sherman, D. K., Nelson, L. D., & Steele, C. M. (2000). Do messages about health risks threaten the self? Increasing the acceptance of threatening health messages via self-affirmation. *Personality and Social Psychology Bulletin*, 26, 1046-1058. Retrieved from <http://psp.sagepub.com/>
- Storch, E.A., Roberti, J.W., & Roth, D.A. (2004). Factor structure, concurrent validity, and internal consistency of the Beck Depression Inventory- Second Edition in a sample of college students. *Depression and Anxiety*, 19, 187-189. doi: 10.1002/da.20002

- Van Dijk, W.W., van Koningsbruggen, G.M., Ouwerkerk, J.W., & Wesseling, Y.M. (2011). Self-esteem, self-affirmation and schadenfreude. *Emotion, 11* (6), 1445-1449. doi: 10.1037/a0026331
- Van Koningsbruggen, G.M., Das, E. & Roskos-Ewoldsen, D. (2009). How self-affirmation reduces defensive processing of threatening health information: evidence at the implicit level. *Health Psychology, 28* (5), 563-658. doi: 10.1037/a0015610
- Vassilopoulos, S.P. (2005). Social anxiety and the vigilance-avoidance pattern of attentional processing. *Behavioural and Cognitive Psychotherapy, 33*, 13-24. doi: 10.1017/S1352465804001730
- Weeks, J. W., Heimberg, R. G., Fresco, D. M., Hart, T. A., Turk, C. L., Schneier, F. R., & Liebowitz, M. R. (2005). Empirical validation and psychometric evaluation of the Brief Fear of Negative Evaluation scale in patients with social anxiety disorder. *Psychological Assessment, 17*, 179-190. doi: 10.1037/1040-3590.17.2.179
- Weidman, A.C., Fernandez, K.C., Levinson, C.A., Augustine, A.A., Larsen, R.J., & Rodebaugh, T.L. (2012). Compensatory internet use among individuals higher in social anxiety and its implication for well-being. *Personality and Individual Differences, 553*(3), 191-195. doi:10.1016/j.paid.2012.03.003
- Wells, A. & Mathews, G. (Eds.). (1994). *Self-focused attention*. Hove, England: 7 Lawrence Erlbaum Associates.

Yuen, E.K., Herbert, J.D., Forman, E.M., Comer, R., & Bradley, J. (2013). Treatment of social anxiety disorder using online virtual environments in second life.

Behavior Therapy, 44, 51-61. Retrieved from www.sciencedirect.com

Table of Appendices

Appendix A: Information Poster

Appendix B: Participant Information Sheet

Appendix C: Participant Consent Form

Appendix D: Ethics Approval from the Human Research Ethics Committee

(Tasmania) Network

Appendix E: Emotional Stroop words

Appendix F: Example of Emotional Stroop Task Pages

Appendix G: Demographic questions

Appendix H: Factor Analysis for Exploratory Analysis with Varimax Rotation of

Brief Fear of negative Evaluation Scale

Appendix I: Self-Affirmation Manipulation

Appendix J: Example of Control Condition Pages

Appendix K: Statistical Analyses Reported in Results Section

K1. Descriptive Statistics

K2. Separate One Way ANOVA's comparing high and low social anxiety groups on factors of Age, Educational Level, Relationship Status and Employment Status.

K3. Separate One Way ANOVA's comparing Self-Affirmation manipulation and control groups on factors of Age, Educational Level, Relationship Status and Employment status.

K4. One way ANOVA with Depression as dependent variable

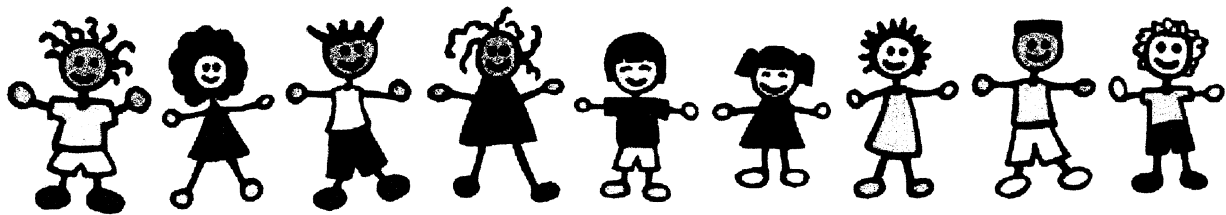
K5. 2 x 2 between subjects ANCOVA with Depression score as covariate

Appendix A

Information Poster



Social Aspects of Thinking



We are seeking participants who are aged 18 years + to participate in a study about how various levels of feeling anxious in social situations relate to thinking about people.

90 minutes course credit available

OR

The chance to win one of three \$50 online shopping vouchers

All you have to do is visit

<https://surveys.psychol.utas.edu.au/index.php?sid=95372&lang=en>
to participate!

For more information about this study please contact Samantha McCarthy by email: sm03@utas.edu.au

This study is being conducted through the School of Psychology as partial fulfilment of a Masters degree and is being supervised by Dr. Jenn Scott and Dr. Ben Schüz.

Please take one of the slips below and go to {URL} to participate!

Appendix B

Participant Information Sheet

Social Anxiety and Self-Affirmation

Information form for participants:

1. Invitation

You are invited to participate in a research study investigating thinking in social situations. This study is being conducted in partial fulfilment of a Masters degree for Miss Samantha McCarthy under the supervision of Dr. Jenn Scott and Dr. Ben Shüz.

2. What is the purpose of this study?

The purpose of this study is to investigate how various levels of feeling anxious in social situations relate to thinking about people. Your participation in this research will help the researchers to better understand the processes involved in how we respond to social situations.

3. Why have I been invited to participate?

This study is open to everyone over the age of 18 years who is willing to complete a number of measures relating to how different levels of anxiety relate to thinking about people.

You are under no obligation to participate in this study. If required, you may print a copy of this information sheet and discuss your decision to consent with others before consenting to participate in this study. It is important that you understand that your involvement in this study is voluntary. While we would be pleased to have you participate, we respect your right to decline. There will be no consequences for you if you decide not to participate in the study.

4. What will I be asked to do?

If you do choose to participate you will be asked to consent to participate and spend approximately 90 minutes completing a number of online questionnaires and response time measures relating to how various levels of feeling anxious in social situations relate to thinking about people. You are able to complete these measures on a computer of your choice at a time convenient for you.

5. Are there any possible benefits from participation in this study?

Personal benefits from this study may come in the form of gaining knowledge about psychological studies and the procedures implemented in psychology research. It is also possible that you may experience more positive feelings or mood states following research participation. We will be interested to see if you experience any other benefits from the research.

If you are a first year psychology student at UTAS, you are also able to receive 90 minutes of course credit for participating. For those not receiving course credit, there

is a chance for you to enter a draw to win one of three online shopping vouchers as a thank you for your participation.

The findings from this study may help gain more information about the role of anxiety in social situations and build upon previous research in this area. It is hoped that this study may lead to uncovering processes that alleviate negative social thought patterns.

6. Are there any possible risks from participation in this study?

It is not expected that you will become distressed in relation to any of the content in this study. However, if you find that you are becoming distressed or experience any mood changes during or following participation in this study please feel free to contact the University Psychology Clinic on 6226 2806 for counseling services at no expense to you. A number of helplines such as Lifeline (13 11 14) and Beyond Blue (1300 22 4636) are also available to you if you experience any adverse effects from this research.

7. What if I change my mind during or after the study?

If you wish to withdraw from this study at any time during your participation, you are able to do so without any consequences or explanation and this data will not be used in the research. However, once you have completed all measures, individual data is unable to be withdrawn as it is collected anonymously and as such is unable to be separated from other participant's data.

8. What will happen to the information when this study is over?

All research data arising from this study will be kept on a password protected secured server for five years after the first publication of this research at which time it will be deleted. All data is completely confidential and will only be accessed by the researchers conducting the study.

9. How will the results of the study be published?

The results of this study will be available on the University of Tasmania website (www.utas.edu.au) and will also be published as a Master thesis. Participants will not be identifiable in the publication of results in any of these formats.

10. What if I have questions about this study?

If you would like to discuss any aspect of this study please feel free to contact either Dr Jenn Scott (email: jenn.scott@utas.edu.au; phone: 6226 2245), Ben Schüz (email: Benjamin.Schuez@utas.edu.au; phone: (03) 62 267 471) or Miss Samantha McCarthy (email: sm03@utas.edu.au). We would be happy to discuss any aspect of the research with you. Once we have analysed the information we will be happy to email you a summary of our findings if you wish. You are welcome to contact us at that time to discuss any issue relating to the research study.

This study has been approved by the Tasmanian Social Science Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study you should contact the Executive Officer of the HREC (Tasmania) Network on (03) 6226 7479 or email human.ethics@utas.edu.au. The Executive Officer is the person

nominated to receive complaints from research participants. You will need to quote H12796.

Thank you for taking the time to consider this study.

If you would like a copy of this consent form, feel free to print a copy or contact the researchers of the study.

To take part in the study please press continue. By pressing continue, this will direct you to a consent form for this study.

Appendix C

Participant Consent Form

Social Aspects of Thinking

Consent Form for Participants:

1. I agree to take part in the research study named above.
2. I have read and understood the Information Sheet for this study.
3. The nature and possible effects of the study have been explained to me.
4. I understand that the study will take up to 90 minutes to complete and involves answering a number of online questionnaires and response time measures pertaining to how different levels of feeling anxious in social situations relate to thinking about people.
5. I understand that participation should not be emotionally distressing. However, if at any point I feel uncomfortable with any of the materials or procedures, I am able to withdraw without question and be directed to psychological services to use if necessary.
6. I understand that all research data will be securely stored on a password protected server for five years from the publication of the study results, at which time it will be deleted.
7. Any questions that I have asked have been answered to my satisfaction.
8. I understand that the researchers will maintain confidentiality and that any information I supply to the researchers will be used only for the purposes of the research.
9. I understand that the results of the study will be published so that I cannot be identified as a participant.
10. I understand that my participation is voluntary and that I may withdraw at any time without any effect.
11. I understand that I will not be able to withdraw my data after completing the study as data has been collected anonymously.

Thank you for considering taking part in this study.

If you would like a copy of this consent form, feel free to print a copy or contact the researchers of the study.

To take part in the study please press continue. By pressing continue, this will indicate that you have given your informed consent to participate in this study.

Appendix D

Ethics Approval from the Human Research Ethics Committee (Tasmania) Network

Social Science Ethics Officer
Private Bag 01 Hobart
Tasmania 7001 Australia
Tel: (03) 6226 2763
Fax: (03) 6226 7148
Katherine.Shaw@utas.edu.au



HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

3 December 2012

Dr Jenn Scott
School of Psychology
Private Bag 30

Student Researcher: Samantha McCarthy

Sent via email

Dear Dr Scott

Re: MINIMAL RISK ETHICS APPLICATION APPROVAL
Ethics Ref: **H0012796 - Social Anxiety and Self-Affirmation**

We are pleased to advise that acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 22 October 2012.

This approval constitutes ethical clearance by the Tasmania Social Sciences Human Research Ethics Committee. The decision and authority to commence the associated research may be dependent on factors beyond the remit of the ethics review process. For example, your research may need ethics clearance from other organisations or review by your research governance coordinator or Head of Department. It is your responsibility to find out if the approval of other bodies or authorities is required. It is recommended that the proposed research should not commence until you have satisfied these requirements.

Please note that this approval is for four years and is conditional upon receipt of an annual Progress Report. Ethics approval for this project will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by these conditions may result in suspension or discontinuation of approval.

1. It is the responsibility of the Chief Investigator to ensure that all investigators are aware of the terms of approval, to ensure the project is conducted as approved by the Ethics Committee, and to notify the Committee if any investigators are added to, or cease involvement with, the project.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

2. Complaints: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or human.ethics@utas.edu.au.
3. Incidents or adverse effects: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
4. Amendments to Project: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.
5. Annual Report: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**
6. Final Report: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw
Ethics Officer
Tasmania Social Sciences HREC

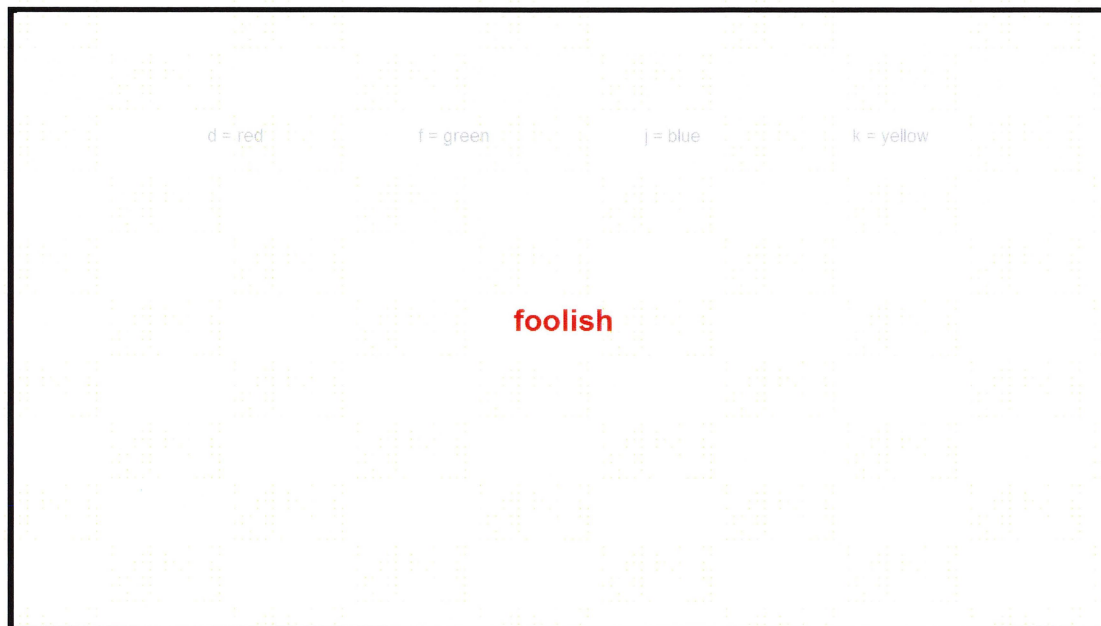
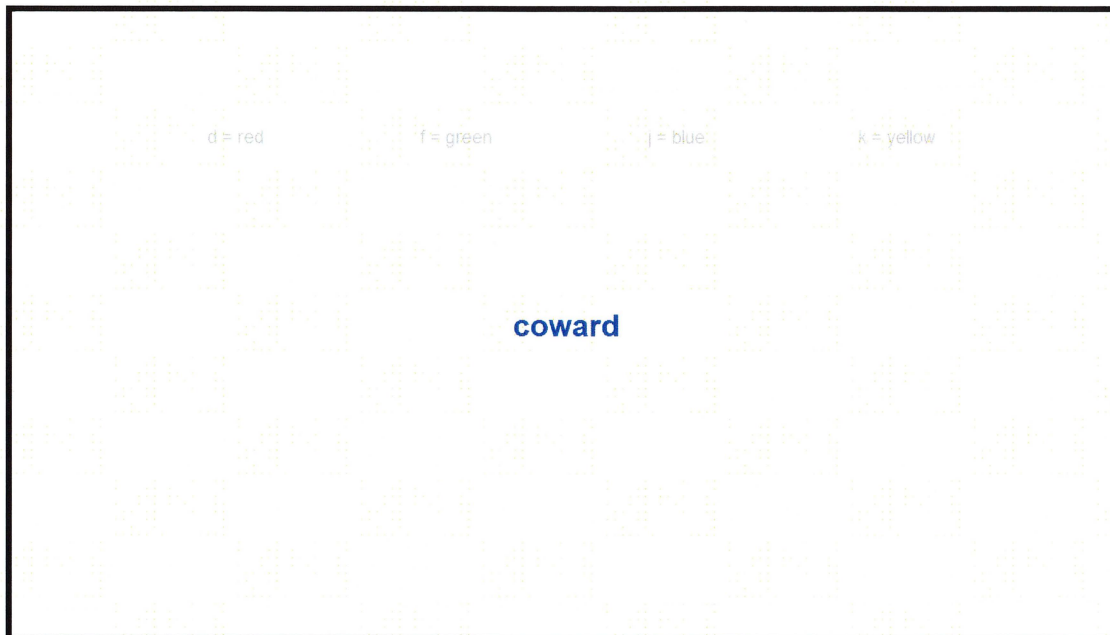
Appendix E

Social threat and Neutral Words

Social Threat Words	Neutral Words
Embarrassed	Specialised
Stupid	Insert
Coward	Network
Inferior	Obsidian
Boring	Metric
Foolish	Portion
Vulnerable	Narratives
Worthless	Softened
Inadequate	Imperative
Ridiculed	Democrat

Appendix F

Example of Emotional Stroop Task Pages



Appendix G

Demographic questions

***How old are you?**

Answer

***Please select your gender**

- ☐ Female
- ☐ Male

***What is your current relationship status?**

Choose one of the following answers

- ☐ Married
- ☐ Engaged
- ☐ Defacto
- ☐ Dating
- ☐ Single
- ☐ Other:

***What is your highest educational level to date?**

Choose one of the following answers

- ☐ Less than year 10
- ☐ Year 10
- ☐ Year 12
- ☐ Undergraduate University Degree
- ☐ Postgraduate University Degree

- ☐ TAFE certificate
- ☐ Other training certificate
- ☐ Other:

***What is your current employment status?**
Choose one of the following answers

- ☐ Employed Full-time
- ☐ Employed Part-time
- ☐ Employed Casually
- ☐ Unemployed
- ☐ Other:

Appendix H

Factor Analysis for Exploratory Analysis with Varimax Rotation of Brief Fear of Negative Evaluation Scale

Item	Component 1	Component 2
BFNES 6 - I am afraid that people will find fault with me	.892	-.094
BFNES 5- I am afraid that others will not approve of me	.886	-.120
BFNES 3- I am frequently afraid of other people noticing my shortcomings	.851	-.104
BFNES 9- I am usually worried about what kind of impression I make	.850	-.217
BFNES 8- When I am talking to someone, I worry about what they may be thinking about me	.849	-.130
BFNES 12- I often worry that I will say or do the wrong things	.848	-.175
BFNES 11- Sometimes I think I am too concerned with what other people think of me	.802	-.276
BFNES 1- I worry about what other people will think of me even when I know it doesn't make any difference	.777	-.360
BFNES 7- Other people's opinions of me do not bother me (R)	-.258	.764
BFNES 2- I am unconcerned even if I know people are forming an unfavourable impression of me (R)	.066	.762
BFNES 10- If I know someone is judging me, it has little effect on me (R)	-.189	.760
BFNES 4- I rarely worry about what kind of impression I am making on someone	-.288	.703

Appendix I

Self-Affirmation Manipulation

The following question looks at how people respond to certain situations. Please take your time and choose the item that best reflects what is most true of you.

Press [space] to continue.

Pick one of the four options below that is most true of you in relation to the following question: If I feel threatened or anxious then I will...

- 1)...think about the things I value about myself.
- 2)...remember things that I have succeeded in.
- 3)...think about what I stand for.
- 4)...think about things that are important to me.

Type the option that you selected (starting with 'if') in the text box below

Press Enter to Continue

Appendix J

Example of Control Condition Pages

The following questions are designed to measure personal opinions. These questions refer to YOUR opinions on each topic. There are no right or wrong answers, so please be as honest as possible. If you answer YES to any of the questions, you will be asked to provide a reason for why you believe this statement

Press [space] to continue

I think the colour blue looks great on most people.

Yes No

1 2

**If you answered 'Yes', then please write
one to two sentences to explain your
answer. If you answered no, then please
continue to the next question**

Press Enter to Continue

Appendix K

Statistical Analyses Reported in Results Section

K1. Descriptive Statistics

Social Anxiety Group	Experimental Condition	<i>M</i>	<i>SD</i>	<i>N</i>
High	SA	27.1411	110.05930	22
	Control	6.5459	77.69212	24
	Total	16.3958	94.05344	46
Low	SA	1.2697	126.47398	54
	Control	1.5670	98.14896	42
	Total	1.3997	114.37401	96
Total	SA	8.7588	121.79804	76
	Control	3.3775	90.65319	66
	Total	6.2576	108.10424	142

K2. Separate One Way ANOVA's comparing high and low social anxiety groups on factors of Age, Educational Level, Relationship Status and Employment Status.

		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Age	Between	39.093	1	39.093	.320	.572
	Groups					
Education level	Between	.998	1	.998	.589	.444
	Groups					
Relationship Status	Between	1.988	1	1.988	.965	.328
	Groups					
Employment	Between	.003	1	.003	.003	.958
Status	Groups					

K3. Separate One Way ANOVA's comparing Self-Affirmation manipulation and control groups on factors of Age, Educational Level, Relationship Status and Employment status.

		Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig..
Age	Between Groups	.011	1	.011	.000	.992
Education level	Between Groups	.001	1	.001	.001	.977
Relationship Status	Between Groups	.005	1	.005	.002	.962
Employment Status	Between Groups	.210	1	.210	.176	.676

K4. Independence of covariate and treatment effect

Source	Type III SS	<i>df</i>	Mean Square	<i>F</i>	Sig.
Corrected Model	3965.804 ^a	3	1321.935	15.597	.000
Intercept	22931.871	1	22931.871	270.558	.000
Social Anxiety	3897.914	1	3897.914	45.989	.000
Group					
Experimental	154.503	1	154.503	1.823	.179
condition					
Social anxiety	13.219	1	13.219	.156	.694
group * Condition					
Error	11696.562	138	84.758		
Total	35068.000	142			
Corrected Total	15662.366	141			

K5. 2 x 2 between subjects ANCOVA

Source	Type III SS	<i>df</i>	Mean Square	<i>F</i>	Sig.	<i>Partial n2</i>
Corrected Model	12132.642 ^a	4	3033.160	.254	.907	.007
Intercept	2085.394	1	2085.394	.175	.677	.001
Depression Score	268.396	1	268.396	.022	.881	.000
Social Anxiety	4365.146	1	4365.146	.366	.546	.003
Group						
Experimental condition	2935.075	1	2935.075	.246	.621	.002
Social anxiety group * Condition	3304.577	1	3304.577	.277	.600	.002
Error	1635667.497	137	11939.17			
Total	1653360.535	14				
		2				
Corrected Total	1647800.13	141				